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The universal mailbox arrives ... sort of. (unified messaging)
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TEXT:

The dream: one mailbox for all messages--voice, fax and email. The reality: multiple systems, just learning how to talk to each other.

Finally, after six years of delay, new client-server messaging architectures are hitting the market. Lotus (Cambridge, MA) launched Lotus Notes Release 4 in January, followed by Microsoft's (Redmond, WA) long-awaited Microsoft Exchange Server in April. Meanwhile, Novell (Orem, UT) is hoping to bring its GroupWise XTD messaging system to market, perhaps as early as September.

Their streamlined administration alone will make the new products attractive replacements for their shared-file predecessors--Lotus's cc:Mail, Microsoft Mail and Novell GroupWise 4.1. These older systems, which work just fine for smaller workgroups, can become administrative nightmares when extended across large organizations. The new offerings help by automating time-consuming tasks like mailbox additions, changes and deletions, and they let users control their own "aliases" (brief names for frequent correspondents), message retrieval and message backup.

A certain number of purchases of Exchange Server, Notes Release 4 or GroupWise XTD will be cost-justified strictly on the basis of saved administrative effort. For these customers, exotic features--like higher-level integration with the Internet and the World Wide Web, or multimedia messaging that includes fax and voicemail--will either be ignored or viewed as a simple bonus.

The Big Three are hoping, of course, that these integrating, unifying features will motivate many more customers to replace their current email, voicemail and fax systems. While Lotus, Microsoft and Novell together control nearly two-thirds (65 percent) of the LAN-based email market--or approximately 30.7 million out of a total of 47.3 million LAN-based mailboxes worldwide-companies such as Lucent Technologies (a subsidiary of AT&T, Basking Ridge, NJ), Octel (Milpitas, CA), Centigram (San Jose) and Siemens Rolm (San Jose) lead the voicemail systems market, and Japanese consumer electronics and office equipment companies dominate the fax market.

Maybe, at one point, email's Big Three really expected to bring voicemail and fax to the LAN environment. But two of the three have since abandoned that path to instead partner with top voicemail vendors. Here's how the Lotus/Lucent and Microsoft/Octel teams are positioning their new client-server systems as a platform for multimedia messaging, mixing email, voicemail, pager, fax and even video messaging into the product.

AT&T and Lucent and Lotus...Oh My!

The "new" AT&T--the long distance carrier--has been giving confusing signals on its Network Notes initiative, but the new equipment company, Lucent Technologies, is actively pursuing the integration of Notes Release 4 with Lucent's latest voicemail technology--the Intuity Multimedia Messaging System. A strategic partnership between what is now Lucent and Lotus was announced last year, after IBM bought Lotus but before Lotus

unveiled Notes Release 4, and before AT&T decided to split in three.

Prior to the alliance, Intuity could translate text to speech, deliver voice-annotated faxes and forward voice messages. Lotus had already announced Phone Notes and Notes Pager Gateway.

Phone Notes collects callers' Touch-Tone responses to survey questions and stores them as Notes documents in a central database, from which they can be processed into written reports. Customers can also use Phone Notes to check the status of shipments, register for seminars or arrange for documents to be faxed.

Notes Pager Gateway alerts users when important email messages are waiting. A message that meets the user's criteria (based, for example, on words in the Subject: field) triggers the Notes server to page the user with a message-waiting notification. Users can also have the first few lines of the message forwarded to them, subject to the size of the pager's display and memory.

Marty Parker, Lucent's marketing and strategic planning director, said AT&T had considered adding its own email capabilities to Intuity, and that Lotus could have added voice processing boards to its Notes server to integrate the resulting system with leading PBX switches. Parker said AT&T also considered--and discarded--the option of adding a Windows-based visual mailbox to Intuity. This simple upgrade would have allowed users to see the contents of their voicemail and email boxes on a single screen.

But neither company could expect to match the other's offering feature for feature, even if they spent the next five years in development. PBX integration is no simple task, nor is designing a client-server email system. Only a few companies are proficient at either task, and none is good at both.

A partnership made more sense, so AT&T and Lotus devised a means to link their respective servers and synchronize their contents. Users can access all messages from either system, using the client of their choice.

In other words, a given message can exist simultaneously on both the Notes server and the Intuity server. When a user reads or listens to the message on one server, it is automatically marked as "read" on the other server. To save disk space, administrators can choose not to store mail in duplicate, but just synchronize the message header information. The body of the message remains on the server where it was originally stored until the recipient requests display or playback.

Users can also choose where and how they want to retrieve their messages. Using a multi-media PC, they can display Notes email and faxes on screen and listen to their voicemail on the system's speakers (by playing the associated WAV audio file). When traveling or working at home, they can call the Intuity server and use a Touch-Tone phone to control message retrieval. Email can be read aloud by a synthesized voice and faxes can be redirected to a convenient fax machine.

Parker said the goal is to change the nature of voice messaging from simple call answering to more email-like usage, where people compose and send messages regardless of whether the recipient is currently available to converse. This will require better server-to-server communications, possibly involving the Internet. He also said that a new generation of Intuity servers will be able to function as messaging hubs, providing a central switch for server-to-server communications.

The gear for Notes/Intuity integration is expected to become available in June. Soon thereafter, according to Parker, Lucent will develop modules that integrate Intuity with cc:Mail, as well as with Novell GroupWise XTD and Microsoft Exchange.

Microsoft and Friends

Meanwhile, Microsoft continues to take the "unified" messaging

approach--storing all mail of all types in the same server. Windows 95 provides a single inbox for messages of several different types (including plain text, rich text, graphic email and faxes, plus voice as WAV files). Exchange Server launched in April with a comprehensive set of messaging integration tools, utilities and addon applications supplied by both Microsoft and its third-party developers.

In fact, Bill Gates devoted most of his keynote speech at last month's NetWorld+Interop conference to a detailed description of Microsoft Exchange. He stressed the difficulty in developing and testing Exchange's ability to interoperate with virtually every legacy email system, the strength of its security and directory services and the mechanisms by which Exchange will guarantee "no lost messages." But he said absolutely nothing about integrated, unified or universal messaging.

Nonetheless, five companies have announced voicemail add-on products for Exchange. Active Voice's (Seattle, WA) TeLANphony and Applied Voice Technology's (Kirkland, WA) CallXpress3 make the Exchange client a visual mailbox for voicemail and fax, while Digital Equipment Corp. and Mitel are working with Microsoft on a comprehensive computer-telephony integration (CTI) system incorporating AlphaServers and Mitel's MediaPath Platform. Finally, Octel has announced Unified Messaging, a voicemail add-on that uses the Exchange Server as its message store, meaning that one universal inbox will hold email, faxes and voicemail.

This is a radical departure for Octel, whose standalone voice messaging systems store messages on their own disk drives. Don Nanneman, Octel's group marketing manager, said that in the new client-server environment, Octel will concentrate on its core competencies--voice and telephony interfaces and voice messaging.

"We don't see ourselves becoming an email company," said Nanneman. "Our strength is in the voice element of messaging. We developed the telephone answering voice messaging software that runs on the server that connects to the telephone system" (see Figure 1).

(Figure 1 ILLUSTRATION OMITTED)

With all the user mailboxes and their messages housed on the Exchanged Server. Octel also relies on the Exchange Server directory services. This may or may not be a good idea.

Voicemail directory systems typically provide a phone extension number in responsible to keying in the first few letters of the called party's last name. Email system directories are much more detailed, routinely including the person's title, room number, fax number, perhaps whether his or her PC contains a sound card and more. Having a single directory seems preferable to the synchronization required under the integrated messaging model, where mail and voicemail systems maintain separate directories and messages stores.

On other hand, the differences between voice and email directories can be traced to the two system's divergent objectives: Voicemail answers as a backup--the person being called isn't available; email is purposely sent knowing the recipient might not read it for an hour or a day.

It remains to be seen how well the new client-server email architectures handle simple, useful voicemail tasks--like providing callers an easily used general directory that works well with the phone system. Will the new email directories do any better job of keeping callers out of "voicemail jail"?

Nanneman said that nothing in Octel's Unified Messaging systems is exclusive to Microsoft Exchange Server, and that a similar voicemail addon for Lotus Notes will be long soon. But what happens to Octel if and when Microsoft or Lotus decide to develop their own techniques for Exchange or Notes servers to answer the phone and record and voice messaging?

Nanneman said Octel is convinced that its years of expertise make it a good long-term partner for Microsoft and Lotus. "There's a difference between being able to act like an answering machine and being able to act like a messaging system," he said. Octel has already developed features allowing users to broadcast voice messages to distribution lists, forward messages to other users and record messages for later delivery.

Where's Novell?

Novell's GroupWise XTD will be the last of the Big Three client-server architectures to make it to market this year. This affords Novell plenty of time to evaluate the competition, and may give it sufficient time to develop or acquire the voicemail technology it needs to stay in the running with Notes/Intuity or Exchange/Octel.

At the moment, Novell is not talking publicly about the partnership with established voicemail vendors. Instead, it's buying telephony expertise at the component level, via Dialogic's (Parsippany, NJ) voice processing boards, each of which support two or four lines, up to a maximum of 12 lines per system.

GroupWise XTD's Universal Inbox is expected to handle voicemail, email, fax and pager messages. It also integrates calendaring and scheduling, electronic forms, group discussions and message filtering, as well as gateways to existing messaging systems and facilities for wireless, remote and mobile users. In other words, Novell is not leaving much room for voicemail vendors to develop add-on products for GroupWise XTD.

Already available for use with GroupWise version 4.1 is Novell's GroupWise Telephone Access Server. Not only can it fax email to a remote user or read it in a synthesized voice, it also can retrieve voice messages and attach them to an email message as a WAV file, allowing playback on a multimedia PC or through a telephone. Users can call in and learn how many new email messages they have, their senders and subjects and how long it would take the synthesized voice to read them. If they don't want the messages faxed or read, they can postpone handling till they can access their mailbox from a computer screen.

Basically, GroupWise turns messages into multimedia email. Faxes become email with fax attachments. Voicemail becomes email with WAV file attachments. Conceivably, video messages could be transported as email with MPEG file attachments. There is one server, one directory and, unlike the partnering approach of Lotus and Microsoft, only one vendor.

Dreams vs. Reality

Novell is getting close to what most people mean when they talk about having a single mailbox: It's less about storing messages in one place than about transforming them from one medium to another. Unfortunately, the two most desirable media transformations are also the least reliable: turning faxes into editable word processor files, and transcribing voice messages into text files. In other words, what users really want from an all-in-one messaging system is what they cannot have--at least not using current technology (see Table 1).

Table 1 Media Conversion Reliability Summary

to (right arrow) from (down arrow)	Voice	Text	Fax
Voice	High	Low	Unavailable
Text	Medium	High	High
Fax	Low	Low	High
Image	Unavailable	Unavailable	High
to (right arrow) from (down arrow)	Image	Pager	
Voice	Unavailable	Medium	
Text	High	High	

Fax	High	Unavailable(*)
Image	High	Unavailable(*)

(*) fax waiting notification are possible.

Speech-to-text conversions are either reliable for many voices with a limited vocabulary or for very few voices and a larger vocabulary, but not both. Fax-to-text conversion typically produces more errors per page than a bad typist. Even systems with a low error rate for certain typefaces can have problems with charts, tables and graphs--often the material the user most wants to edit.

In a controlled environment, messages can be converted more reliably from one medium to another. Optical character recognition (OCR) systems can achieve 95 percent or higher accuracy turning scanned pages into word processor files, and speech-to-text systems exist that can understand spoken numerals for virtually any caller.

But a true multimedia messaging environment will necessarily be full of unknowns: What happens when faxes arrive upside down or blurry? What to do when a stranger calls and wants to leave a voice message that consists of more than a return phone number?

A new fax standard--T.434 Binary File Transfer--allows fax machines to also exchange email. Such messages could contain a copy of the word processor file that was used to print the fax in the first place. Thus the fax and the editable file can arrive together. T.434 is so new, however, that only a tiny portion of the installed base of fax machines supports it.

Meanwhile, Novell's technique of converting other media to email attachments solves part of the problem--getting voice, fax and email into the same inbox. But the voice and fax attachments are invisible to the keyword search engines that can find an email message based on a single word in the message body.

Conclusion

The ideal multimedia messaging system should be robust enough to replace the existing voicemail, email and fax system, with no loss in functionality. But more important, users should gain new capabilities, not simply keep what they already get from separate systems. The ideal system should also be able to scale up to enterprise-wide deployment, becoming the messaging system for all a company's needs. And it should take less time and effort to administer than separate systems do now.

In other words, the ideal multimedia messaging system is not yet on the market. A single mailbox on a single message store is not enough. Without a reliable means to turn faxes and voicemail into text files, a single mailbox is only marginally better than three separate mailboxes for email, voicemail and faxes. Just because Lotus Notes Release 4 and Microsoft Exchange Server can handle voice doesn't mean that they should be used to replace current voicemail systems. Just because they can handle faxes doesn't make free-standing Group 3 fax machines obsolete.

None of the Big Three's new product lines is qualified to become a company's only messaging system. They lighten some administrative burdens and, yes, they can handle multimedia messages that include voice and fax. But no, they cannot replace the features and functionality of existing voicemail systems.

Microsoft's 40+ betas with 60,000 mailboxes notwithstanding, it will probably take a year or two for the Big Three to convert any substantial percentage of their customers to the new architectures. And these early customers will be replacing their current email systems-not their entire email, voicemail and fax infrastructures. As a result, integrated, unified and universal Messaging are likely to be no more than discussion topics for network planners this year: They won't begin to command significant market

shares until 1997 or 1998.

RELATED ARTICLE: Integrated? Unified? Universal?

To a customer, the difference may seem like an exercise in semantics. But to vendors, each term has a different meaning:

* Integrated Messaging means there are multiple, coordinated servers for multiple types of messages: email, voice and fax.

* Unified Messaging means that all message types are stored on the same server.

* Universal Mailboxes give end users the ability to retrieve all types of messages through simple client interfaces.

It's essentially a difference in point of view. With Unified Messaging, users have one mailbox, which they can access from multiple clients. With Integrated Messaging, there are multiple mailboxes and multiple clients, and quite a bit of behind-the-scenes synchronization between the servers and their associated directories.

Integrated Messaging allows access to these multiple mailboxes on multiple systems from a single point. For instance, a telephone could be used to listen to the messages on a voicemail server. Or the phone could be used to prompt the playback of an email message that resides on a different server, using a text-to-speech converter.

To end users, the difference between Unified Messaging and Integrated Messaging is not all that significant. What matters more is whether they can get an accurate picture of all their messages, whether they're using a Touch-Tone telephone, a PC keyboard or another type of terminal to check their inbox.

RELATED ARTICLE: Approaches to the Internet

As if there weren't enough surrounding the integration of voicemail, fax machine and LAN-based email, along comes another whole community of messaging users on the Internet. The number of host computers attached to the Internet crossed the 10-million mark in early 1996, a total that suggests upwards of 50 million users worldwide.

Internet-based applications such as the World Wide Web may have a significant role to play multimedia messaging. Lotus, Microsoft and Novell have already made their moves to support Web browsers such as Netscape Navigator. This will allows messaging users to reach their mailboxes from any remote computer that has Web access, by entering a Web address and then typing in their user name and password at the prompts. It's conceivable that, as Web browsers get better at retrieving, playing and displaying multimedia message attachments, they could become a popular client for accessing a multimedia mailbox inside the organization as well.

As long as access to the Internet continues to be sold on a flat-rate basis, it's "cheaper than a phone call" aspect may increase its role in multimedia messaging. At the very least, the Internet will be used increasingly as an inexpensive pipeline to move messages from sender to recipient, whether they're using a fax, phone or computer terminal.

Voice messaging vendor have already implemented the Audio Messaging Interchange Specification (AMIS) for high-speed server-to-server communications over digital networks, but its reliance on the X.400 protocol stack has limited its appeal. Last month, during tha annual meeting of the Electronic Messaging Association (EMA) in Anaheim, CA, five top voice messaging vendors--Lucent, Siemens Rolm, Octel, Nortel and Centigram--demonstrated server-to-server voicemail transfer over the Internet using the draft Voice Profile for Internet Mail (VPIM) standard outlined in RCF 1911.

But the Internet could also reduce the need for a separate phone network, and for phone calls themselves. If what that were to happen, voice

would become just another media type on the Internet, and the need for voice experts that know the intricacies of a PBX or the phone networks would be reduced.

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